

A SYNOPSIS OF NEOTROPICAL *ELELEIDES* CRESSON
(DIPTERA: EPHYDRIDAE)

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Abstract.—A synopsis of Neotropical *Eleleides* is presented and includes a key to all species, appropriate figures, description of a new species (*E. penai*), distributional notes on *E. liroceras* and a general discussion of the genus. *Eleleides liroceras* and *E. penai* are shown to be sister-species. The former is newly described from Chile (type-locality: Anticura, Osorno Province) and fulfills an earlier prediction that additional members of *Eleleides* would be found in western South America. The known distribution of *E. liroceras* is increased to southern Brazil (Nova Teutonia) and southern Chile (Lampa and Anticura).

Since the revision of *Eleleides* Cresson by Mathis (1977), additional specimens of both *E. liroceras* Mathis and a new species have become available. The new species is the third to be described in *Eleleides* and the second from South America. The purpose of this paper is to report these discoveries and to comment on the distribution and relationships of the species. The methods used are those of my earlier revision, particularly the descriptive portions which follow the same format as used previously.

The new specimens of *E. liroceras* were collected in the state of Santa Catarina, Brazil, and in the provinces of Osorno and Santiago, Chile, which substantially increases the known distribution of that species. Likewise, the occurrence of a second Neotropical species on the west slope of the Andes Mountains is an important discovery. Not only does the distribution of the genus now appear more plausible, but the new species partially fulfills an earlier prediction that other members of the genus are likely to be found in western South America (Mathis, 1977).

Key to species of *Eleleides* Cresson

1. Third antennal segment and maxillary palp black; eye-to-cheek ratio less than 1:0.25; 1 or more pairs of larger acrostichal setae in addition to prescutellar acrostichal pair; supra-alar seta well developed, at least $\frac{1}{2}$ length of postalar seta (Australia) *E. chloris* Cresson
- Third antennal segment and apex of maxillary palp orange to yellowish orange; eye-to-cheek ratio more than 1:0.40; all acrostichal setae except for prescutellar acrostichal pair uniform in size, small; supra-alar seta lacking or greatly reduced

2. Tibiae yellowish orange, concolorous with basitarsi; mesopleuron completely silvery gray, pollinose, contrasting distinctly with bronze-colored mesonotum; abdominal terga usually with pollinose grayish wedges extending dorsally from ventral margins (Argentina, Brazil and Chile) *E. liroceras* Mathis
- Tibiae mostly black, concolorous with femora; mesopleuron mostly brown to bronze colored, concolorous with mesonotum; abdominal terga unicolorous or at most slightly grayish along ventral margins (Chile) *E. penai*, new species

Eleleides liroceras Mathis

Fig. 4

Eleleides liroceras Mathis, 1977:560 (figures of head, thorax, wing, and male genitalia).

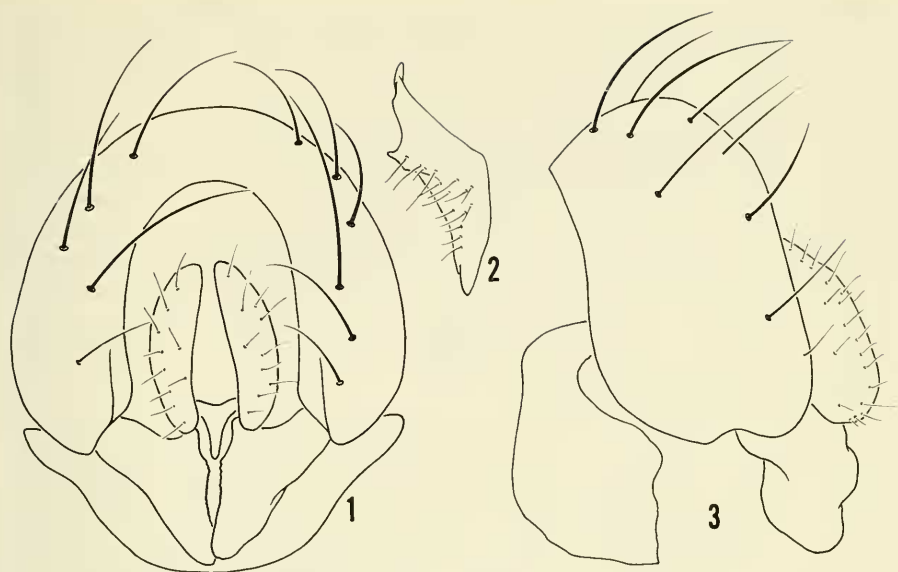
Remarks.—When this species was described, specimens were available only from the type-locality, Hurlingham, Buenos Aires, Argentina. I have now examined five additional specimens as follows: Brazil: Santa Catarina, Nova Teutonia (27°11'S, 52°23'W), Sept. 1970, Fritz Plaumann (2♀, MZUSP). Chile: Osorno Province, Anticura (1 km W.), 1–3 Feb. 1978, W. N. Mathis (1♀, USNM). Santiago Province, Lampa (22 km N. Santiago), 21 Jan. 1978, W. N. Mathis (2♂, USNM). Although I am confident that these specimens are conspecific with those from the type-series, males were available only from the Lampa locality for confirmation.

Based on the locality data now at hand, I would expect to find specimens of this species throughout the *Araucaria* zone of southern South America where sedge-meadow habitats exist.

Eleleides penai Mathis, new species

Figs. 1–4

Diagnosis.—Specimens of *E. penai* are distinguished from those of both congeners by the following combination of characters: Third antennal segment pale, yellowish orange to orange; frons mostly pollinose, grayish-bronze colored, except for subshiny vitta extending from median ocellus to ptilinal suture; maxillary palp pale, yellowish orange on apical $\frac{1}{2}$ to $\frac{3}{4}$; eye-to-cheek ratio more than 1:0.40; mesonotum pollinose to subshiny, mostly bronze colored, becoming grayer toward lateral margins, scutellum and posterior portion of mesonotum not distinctly darker in color; bristles in general more strongly developed; no larger pairs of acrostichal bristles except for prescutellar pair; supra-alar seta reduced greatly or lacking; mesopleuron mostly brown to bronze colored, concolorous with mesonotum and contrasting distinctly with silvery-gray color of notopleuron; tibiae



Figs. 1-3. *Eleleides penai*. 1, Epandrium, cerci, surstyli and hypandrium, posterior aspect. 2, Anterior surstylus, lateral aspect. 3, Epandrium, cerci, surstyli and hypandrium, lateral aspect.

dark, grayish black to black, concolorous with femora; abdominal terga lacking distinct grayish wedges extending dorsally from ventral margins, at most slightly grayish along ventral margin.

Description.—Length 2.36 to 2.97 mm (averaging 2.66 mm).

Head: Head width-to-height ratio averaging 1:0.79; frons width-to-length ratio averaging 1:0.61; frons subshiny, black with dense bronzish-brown pollinose vestiture, pollinosity becoming weaker anteriorly; frontal vitta between median ocellus and ptilinal suture, subshiny, becoming narrower anteriorly, bronze colored; fronto-orbital plate slightly raised in relief from remainder of frons. First and 2nd antennal segments black, mostly dull; 3rd segment slightly longer than wide, mostly pale, yellowish orange to orange, becoming darker along dorsal edge in some specimens, macro-pubescent along rounded apical edge. Face and gena concolorous, silvery gray, densely pollinose to tomentose, face height-to-width ratio averaging 1:0.67; clypeus black, with pollinose vestiture less dense than face; maxillary palp pale on apical $\frac{1}{2}$ to $\frac{2}{3}$, yellowish orange, concolorous with 3rd antennal segment, becoming darker, brownish black basally. Eye height-to-width ratio averaging 1:0.90; eye-to-cheek ratio averaging 1:0.43; ventral portion of gena with a shallowly impressed groove running parallel with edge.

Thorax: Black, covered with pollinose vestiture; mesonotum mostly dull

anteriorly, becoming subshiny posteriorly, brown to bronze colored, becoming grayer anteriorly and laterally; humerus and notopleuron concolorous, gray, contrasting distinctly with mesonotum; mesopleuron and pteropleuron concolorous mostly grayish bronze, posterior margins gradually becoming grayer; propleuron, front coxa, sternopleuron and hypopleuron nearly concolorous, mostly gray to silvery gray, becoming slightly darker posteriorly. Femora and tibiae of all legs concolorous, subshiny to pollinose, bronzish black, base and apex of tibiae paler, yellowish; basitarsus of each leg pale, yellowish; other tarsomeres becoming darker apically, apical ones mostly black. Wing entirely hyaline; wing length-to-width ratio averaging 1:0.44; costal vein ratio averaging 1:0.50; M_{1+2} vein ratio averaging 1:0.80; posterior crossvein perpendicular with vein M_{1+2} . Halter pale, capitellum white, pedicel yellowish.

Abdomen: Subshiny to shiny dark metallic bronzish-black coloration; some specimens with ventral margin of each tergum slightly more pollinose, grayish. Male terminalia as follows (Figs. 1-3): Posterior surstylus triangular in posterior aspect, medium edge crenulate to serrate, with medio-posterior enlargement in lateral aspect, wider dorsally; anterior surstylus with anterior margin setose, posterior margin angulate; epandrium $2\times$ as wide as high, narrowing ventrally. Female ventral receptacle similar to that of *E. liroceras* (Figs. 6-7, Mathis, 1977).

Type-material.—Holotype ♂, labelled: "CHILE: Osorno Pr. Anticura (1 km W) 432 m elev. 1-3 Feb. 1978 WNMmathis." Allotype ♀ and 2 paratypes (1♂, 1♀; USNM): with same locality data as the holotype; dates from 3-6 February 1978. Other paratypes as follows: CHILE: Santiago Province: El Alfalfal, 22 Jan 1978, W. N. Mathis (1♂, 2♀; USNM); Coquimbo Province: El Naranjo, Tilama, October 1967, L. E. Peña (1♂, 4♀; MZUSP). Chiloe Province: Chepu, April 1968, L. E. Peña (1♀; MZUSP). The holotype is in the National Museum of Natural History Smithsonian Institution, Washington, D. C., (USNM type-number 75764).

Geographic distribution (Fig. 4).—Specimens were examined from four localities in Chile between 32° and 42° south latitude. This distribution substantiates an earlier prediction (Mathis, 1977) that other members of the genus would be discovered in western South America.

Natural history.—All specimens taken by me were collected in sedge-meadow habitats. The surrounding environs of each sedge-meadow habitat varied considerably from scrub-covered foothills southeast of Santiago (El Alfalfal) to *Nothofagus* forests (Anticura) in the Lake district of southern Chile.

Etymology.—The species epithet, *E. penai*, is a genitive patronym honoring Luis E. Peña G., J. I. Molina Institute, who collected part of the type-



Fig. 4. Distribution map of *E. liroceras* and *E. penai*.

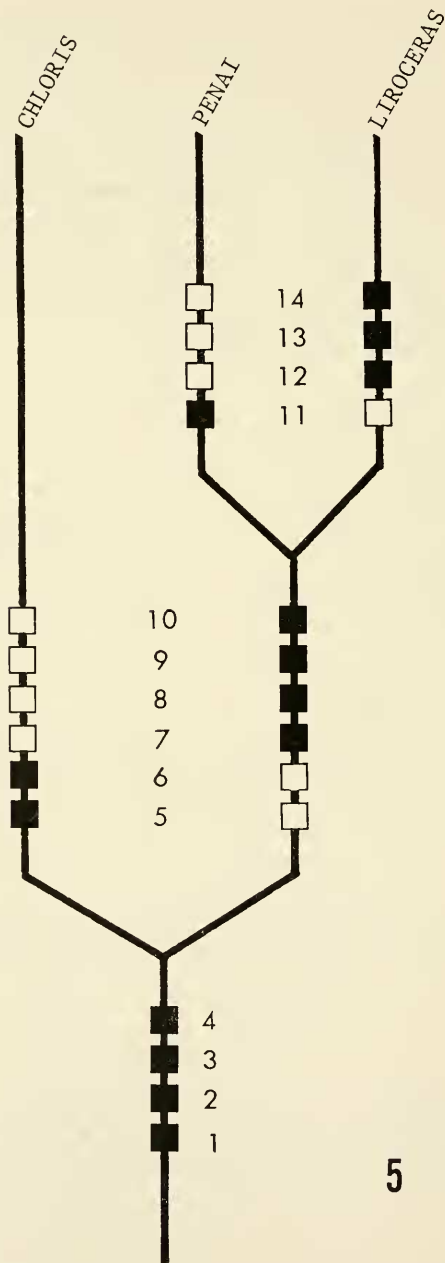
series and who graciously hosted me in Chile while I collected the remainder.

Relationships.—This species and *E. liroceras* are sister-species. This relationship is corroborated by numerous synapotypies as indicated in Fig. 5 and Table 1.

General Discussion

Although the distribution of *Eleleides* remains disjunct, the discovery of an additional species in western South America and of the extended range of *E. liroceras* substantiates their south temperate distribution. Still, I am of the opinion that more members of the genus will yet be found and suggest that South Africa or New Guinea will be productive in this regard.

The distribution of *Eleleides* species in South America is not related to



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Fig. 5. Argumentation scheme for the hypothetical phylogeny of the genus *Eleleides*. Filled squares = apotypic character states; open squares = plesiotypic character states.

Table 1. Character and character states used in the phyletic analysis of the species of *Eleleides*.

CHARACTER	Character States	
	Apotypic	Plesiotypic
1. Dorsal branches of arista	few, 5 or fewer	many, 7 or more
2. Orientation of largest fronto-orbital seta	posterolateral, oblique	proclinate
3. Size of supra-alar seta	smaller than postalar seta	as large or larger than postalar seta
4. Shape of ventral margin of face	emarginate, arched	flat
5. Size of acrostichal setae	1 larger pair of sutural setae	all subequal
6. Facial vestiture	mediodorsal portion partially bare, subshiny	uniformly pollinose
7. Coloration of 3rd antennal segment	pale, yellowish orange	dark, concolorous with first and second segments
8. Eye-to-cheek ratio	large	small
9. Supra-alar seta	absent	present
10. Coloration of maxillary palp	pale, yellowish orange	dark
11. Coloration of mesopleuron	concolorous with mesonotum	vestiture much lighter than mesonotum
12. Coloration of tibiae	pale, yellowish	dark, concolorous with femur
13. Symmetry of aedeagus	asymmetrical	symmetrical
14. Coloration and vestiture of ventral margins of abdominal terga	grayish, pollinose wedges extending dorsally from ventral margin	concolorous with remainder of terga or at most with slightly grayish margin ventrally

conventional biogeographic provinces used to partition that continent (Cabrera and Willink, 1973). This is evident from the distribution of either species. The distribution of *E. liroceras*, for example, includes four of Cabrera and Willink's biogeographic provinces: Paranense, Pampeana, Chilena and Subantartica. The Paranense and Pampeana provinces are adjacent, along the east coast near the Parana and La Plata Rivers, but the Subantartica and Chilena provinces are far removed, being situated along the western slope of the Andes Mountains. Likewise, *E. penai* is known to occur in more than one biogeographic province in western South America. What seems to be more important to the distribution of *Eleleides* is the occurrence of aquatic systems, almost without regard to the surrounding habitat. Where sedge-meadow habitats occur in temperate South America, it is likely that specimens of *Eleleides* will also be found there.

The widespread distribution of *Eleleides* species also indicates that the species of *Eleleides* are probably not closely associated with a particular plant species. The biogeographic provinces, as defined by Cabrera and Willink (1973), are based primarily on the distribution of plants; and, because the distribution of *Eleleides* species broadly overlaps these, the likelihood of a specific plant association seems remote.

The relationships among species of *Eleleides* is summarized in Fig. 5 and the accompanying list of character evidence (Table 1). The numbered squares refer to the list of character states on the table.

Acknowledgments

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